

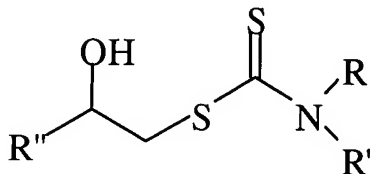
WHAT IS CLAIMED IS:

1. A lubricant composition comprising a molybdenum source, a hydroxy-substituted dithiocarbamate, and optionally, a phosphorous source.

5

2. The composition of claim 1, wherein the hydroxy-substituted dithiocarbamate has the formula:

10



wherein R and R' may be independently hydrogen or alkyl with the requirement that at least

15 one of R or R' is C₁ to C₂₂ alkyl, R'' is hydrogen, C₁ to C₂₂ alkyl, R'''XCH₂,

R'''O(C=O)CH₂XCH₂, or R'''O(C=O)CH₂CH₂XCH₂ where R''' is C₁ to C₂₂ alkyl, and X is oxygen (O) or sulfur (S).

20

3. The composition of claim 2, wherein R and R' are alkyl.

4. The composition of claim 2, wherein R'' is hydrogen.

5. The composition of claim 2, wherein R" is alkyl.
6. The composition of claim 2, wherein R" is R'''XCH₂.
- 5 7. The composition of claim 2, wherein R" is R'''O(C=O)CH₂XCH₂.
8. The composition of claim 2, wherein R" is R'''O(C=O)CH₂CH₂XCH₂.
- 10 9. The composition of claim 6, wherein X is oxygen (O).
10. The composition of claim 6, wherein X is sulfur (S).
11. The composition of claim 7, wherein X is oxygen (O).
- 15 12. The composition of claim 7, wherein X is sulfur (S).
13. The composition of claim 8, wherein X is oxygen (O).
- 20 14. The composition of claim 8, wherein X is sulfur (S).

15. The composition of claim 1, wherein the molybdenum source is selected from the group consisting of molybdenum carboxylates, molybdenum complexes of organic amides, molybdenum complexes of organic amines, and molybdenum dialkyldithiocarbamates.

5

16. The composition of claim 1, wherein the molybdenum source comprises a molybdenum carboxylate.

17. The composition of claim 1, wherein the molybdenum source comprises
10 a molybdenum complex of an organic amide.

18. The composition of claim 1, wherein the molybdenum source comprises a molybdenum complex of an organic amine.

19. The composition of claim 1, wherein the molybdenum source comprises a
15 molybdenum dialkyldithiocarbamate.

20. A composition comprising a molybdenum source, a hydroxy-substituted dithiocarbamate, and a phosphorous source.

20

21. The composition of claim 20, wherein the phosphorous source is selected

from zinc dialkyldithiophosphates, alkyl phosphites, aryl phosphites, mixed alkyl/aryl phosphites, alkyl thiophosphites, aryl thiophosphites, mixed alkyl/aryl thiophosphites alkyl phosphates, aryl phosphates, mixed alkyl/aryl phosphates, metal or amine salts of phosphorodithioic acids, ashless dialkyldithiophosphates, ashless diaryldithiophosphates, and
5 mixed ashless alkyl/aryldithiophosphates.

22. The composition of claim 20, wherein the phosphorous source comprises zinc dialkyldithiophosphate.

10 23. The composition of claim 20, wherein the phosphorous source comprises zinc diethyl/diisopropyldithiophosphate.

24. The composition of claim 20, wherein the hydroxy-substituted dithiocarbamate is present in an amount of from about 0.05 to about 1.5 weight percent, the molybdenum source
15 is present in an amount to deliver from about 25 to about 1500 ppm molybdenum, and the phosphorus source is present in an amount to deliver from about 250 to about 1000 ppm phosphorus.

25. An additive concentrate comprising the composition of claim 1.

20

26. A lubricating oil comprising a major amount of a base oil of lubricating

viscosity, and a minor amount of a composition of claim 1.

27. The lubricating oil of claim 26, wherein the composition of claim 1 is present in an amount of from about 0.25 to about 2.5 percent by weight of the lubricating oil.

5

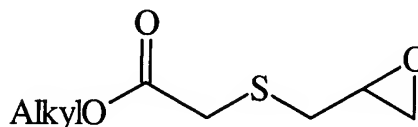
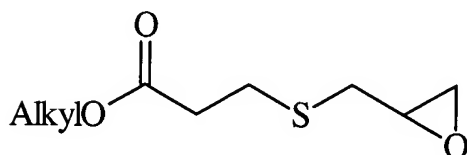
28. The composition of claim 1, wherein the hydroxy-substituted dithiocarbamate is present in an amount of from about 0.05 to about 1.5 weight percent, and the molybdenum source is present in an amount to deliver from about 25 to about 1500 ppm molybdenum.

10 29. A reaction product produced by combining in substantially equimolar proportions an epoxide, a primary or secondary amine, and carbon disulfide, said process being carried out in the absence of a reaction solvent.

30. The reaction product of claim 29, wherein the reactants are combined in substantially
15 equimolar proportions, and combining being carried out in the absence of a reaction solvent.

31. The reaction product of claim 29, wherein the epoxide is selected from the group consisting of ethylene oxide, propylene oxide, 1,2-butylene oxide, 1,2-epoxypentane, 1,2-epoxyhexane, 1,2-epoxyheptane, 1,2-epoxyoctane, 1,2-epoxynonane, 1,2-epoxydecane, 1,2-
20 epoxyundecane, 1,2-epoxydodecane, 1,2-epoxytridecane, 1,2-epoxytetradecane, 1,2-epoxypentadecane, 1,2-epoxyhexadecane, 1,2-epoxyheptadecane, 1,2-epoxyoctadecane, methyl

glycidyl ether, ethyl glycidyl ether, propyl glycidyl ether, butyl glycidyl ether, pentyl glycidyl ether, hexyl glycidyl ether, cyclohexyl glycidyl ether, heptyl glycidyl ether, octyl glycidyl ether, nonyl glycidyl ether, decyl glycidyl ether, undecyl glycidyl ether, dodecyl glycidyl ether, tridecyl glycidyl ether, tetradecyl glycidyl ether, pentadecyl glycidyl ether, hexadecyl glycidyl ether, heptadecyl glycidyl ether, octadecyl glycidyl ether, methyl glycidyl thioether, ethyl glycidyl thioether, propyl glycidyl thioether, butyl glycidyl thioether, pentyl glycidyl thioether, hexyl glycidyl thioether, cyclohexyl glycidyl thioether, heptyl glycidyl thioether, octyl glycidyl thioether, nonyl glycidyl thioether, decyl glycidyl thioether, undecyl glycidyl thioether, dodecyl glycidyl thioether, tridecyl glycidyl thioether, tetradecyl glycidyl thioether, pentadecyl glycidyl thioether, hexadecyl glycidyl thioether, heptadecyl glycidyl thioether, octadecyl glycidyl thioether, isomers thereof and mixtures thereof, and compounds of the formulae:



wherein the alkyl group can vary from C_1 to C_{18} and include all possible linear, and *n*-, and branched, and *iso*-alkyl isomers thereof.

32. The reaction product of claim 29, wherein the primary or secondary amine is selected from methylamine, dimethylamine, ethylamine, diethylamine, butylamine, dibutylamine, pentylamine, dipentylamine, hexylamine, dihexylamine, heptylamine, diheptylamine,

octylamine, dioctylamine, nonylamine, dinonylamine, decylamine, didecylamine, undecylamine, bis(undecyl)amine, dodecylamine, bis(dodecyl)amine, tridecylamine, bis(tridecyl)amine, tetradecylamine, bis(tetradecyl)amine, pentadecylamine, bis(pentadecyl)amine, hexadecylamine, bis(hexadecyl)amine, heptadecylamine, 5 bis(heptadecyl)amine, octadecylamine, bis(octadecyl)amine, butyloctylamine, and isomers thereof, and mixtures thereof.

10 33. The product of claim 29, wherein the epoxide, primary or secondary amine, and carbon disulfide are combined at a molar ratio of approximately 1:1:1.

34. The product of claim 29, wherein the epoxide, primary or secondary amine, and carbon disulfide are combined at a molar ratio of approximately 1:1:1.2.

15 35. The product of claim 29, wherein the epoxide, primary or secondary amine, and carbon disulfide are combined at a molar ratio of approximately 1.2:1:1.2.

36. The product of claim 29, wherein the epoxide is styrene oxide.

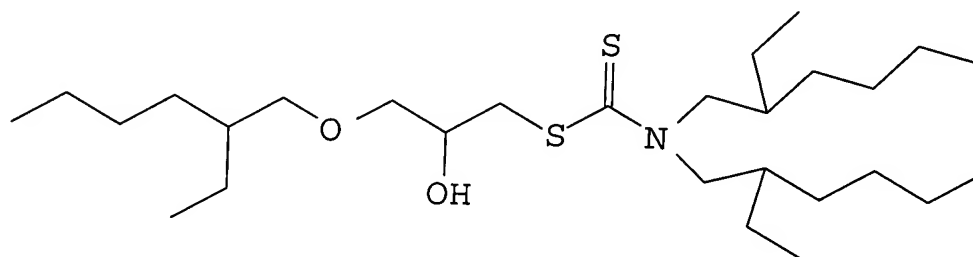
20 37. The lubricating oil of claim 26, wherein the base oil of lubricating viscosity is selected from animal oils, vegetable oils, mineral lubricating oils, solvent or acid treated mineral oils, oils derived from coal or shale, hydrocarbon oils, halo-substituted hydrocarbon oils, alkylene

oxide polymers, esters of dicarboxylic acids, esters of polyols, esters of phosphorus-containing acids, polymeric tetrahydrofurans, silicon-based oils, and mixtures thereof.

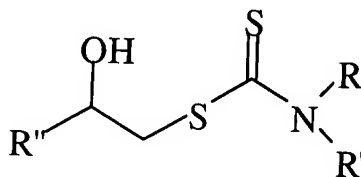
38. The compound 3-(2-ethylhexyloxy)-2-hydroxypropyl bis(2-ethylhexyl)
5 carbamodithioate.

39. The compound 3-(2-ethylhexyloxy)-2-hydroxypropyl dibutylcarbamodithioate.

40. A compound with the following chemical formula:



41. A lubricating composition comprising a compound with the following chemical
formula:

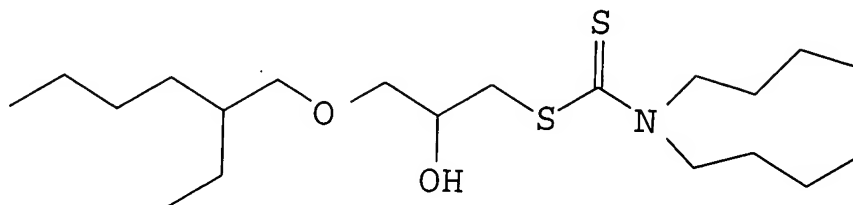


wherein R, R' and R'' are alkyl groups, and wherein the sum of the number of carbon atoms

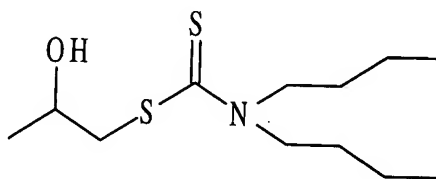
of R and R' is 8 or more, and R'' is hydrogen or alkyl.

42. A lubricating composition comprising a compound with the following chemical formula:

5

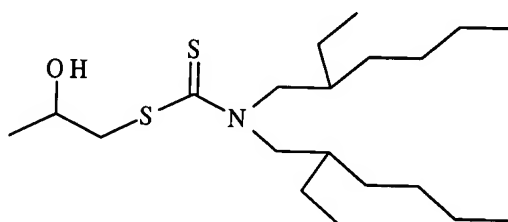


43. A lubricating composition comprising a compound with the following chemical formula:



15

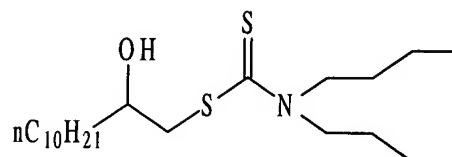
44. A lubricating composition comprising a compound with the following chemical formula:



20

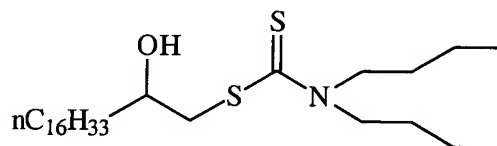
45. A lubricating composition comprising a compound with the following chemical formula:

5



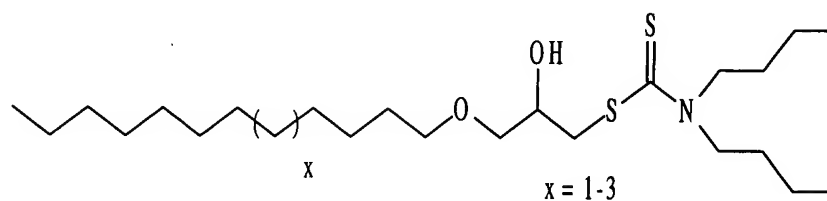
46. A lubricating composition comprising a compound with the following chemical formula:

10



47. A lubricating composition comprising a compound with the following chemical formula:

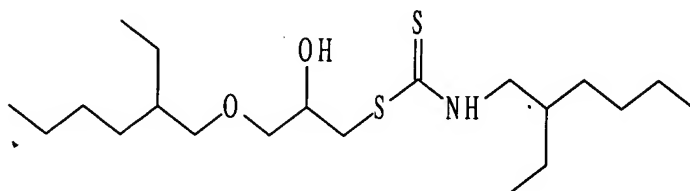
15



20

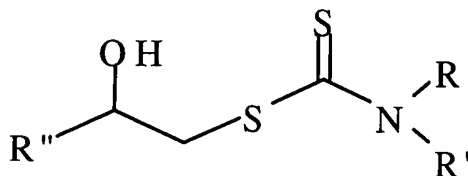
48. A lubricating composition comprising a compound with the following chemical formula:

5



49. A lubricating composition comprising a compound with the following chemical formula:

15



wherein R, R' and R'' are alkyl groups, and wherein the sum of the number of carbon atoms of R and R' is 8 or more, and R'' is R'''XCH₂, where R''' is alkyl and X is oxygen.